

REMARKS

Drawings

Applicant will submit new formal drawings when the application is allowed, as required.

Claims Pending

Claims 1-19 are pending in this application. Claims 1, 15, 16 and 19 are independent claims, Claims 2-14 are ultimately dependent from Claim 1, and Claims 17 and 18 are dependent from Claim 16. Claim 14 is amended to be dependent from Claim 13, to provide antecedent basis for "said means for operator output".

Claim 18 is indicated allowable if rewritten to overcome the rejection under 35 U.S.C. 112 ¶ 2 and to include the limitations of the base claim, Claim 16. Claim 19 is indicated allowable if rewritten to overcome the rejection under 35 U.S.C. 112 ¶ 2. Claims 16 and 19 are amended, as set forth below, to overcome the rejection under 35 U.S.C. 112 ¶ 2. Claim 16, as amended, is believed allowable, as set forth below, so Claim 18 should be allowable as originally written.

In the first paragraph of the Detailed Action, the Office Action states that Claims 2 and 3 are substantially duplicate claim. The Office Action further states that the first, second and third laser diodes of each said set being oriented at 120 degrees to each other is implicit in the positioning of the three laser diodes in an equilateral triangle. Claim 2 and 3 are not duplicates. The orientation of each laser diode determines the orientation of the laser beam that

is emitted. The orientation of each laser diode can be selected independently from the selection of the arrangement of the laser diodes.

The first, second and third laser diodes could be arranged in an equilateral triangle and oriented parallel to each other, or arranged in a straight line and oriented at 120 degrees to each other. The first, second and third laser diodes could be arranged in an equilateral triangle, oriented at 120 degrees to each other, and oriented at 90 degrees to a line from each laser diode to the center of the triangle. Claim 1 recites the arrangement of the laser diodes in the array, Claim 2 further recites a definition of the relative orientation of the laser diodes and Claim 3 recites a relatively narrower definition of the relative orientation of the laser diodes.

Claim Objections

Claim 15 is amended to remove the duplicate language at lines 24-28, and to add the wavelengths of the laser diodes.

Claims rejected under 35 U.S.C. § 112 ¶ 2

Claims 1-19 were rejected under 35 U.S.C. § 112 ¶ 1 as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. The Office Action states that "Claims 1, 15, 16 and 19 are indefinite due to citing four sets of laser diodes arranged in an equilateral triangle." The original

Claims 1, 15, 16 and 19 recited "said sets being arranged in equally spaced, equilateral triangles". Claims 1, 15, 16 and 19 are amended to read "each said set being arranged in an equilateral triangle, said sets being equally spaced about said center". Applicant submits that the amendments clarify the structure claimed and requests that the rejection of Claims 1-19 under 35 U.S.C. § 112 ¶ 2 be withdrawn.

Claims rejected under 35 U.S.C. § 103

Claims 1-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,602,275 to Sullivan. Claims 1-7, as amended, are believed to patentably define a combination patentable over Sullivan for the reasons hereafter set forth.

Briefly stated, Claim 1 claims a therapeutic laser system including a housing having a front and a back, and a substantially planar diode array mounted in a recessed manner on the back of the housing. The housing is sized and shaped to be comfortably held in the hand of an operator. The array has a center and four sets of laser diodes each having a first, second and third laser diode. Each set is arranged in an equilateral triangle. The sets are equally spaced about the center with the first laser diodes of each set being spaced a first distance from the center of the diode array, and the second and third laser diodes being spaced a greater second distance from the center of the diode array.

Sullivan does not teach or suggest an array with sets of first, second and third laser diodes, does

not teach or suggest sets of laser diodes equally spaced about the center of the array, does not teach or suggest sets of first, second and third laser diodes each arranged in an equilateral triangle, and does not teach or suggest the first laser diodes each being spaced a first distance from the center of the diode array, and the second and third laser diodes each being spaced a greater second distance from the center of the diode array.

The Office Action states that the applicant "has not disclosed that a specific pattern provides an advantage, is used for a particular purpose, or solves a stated problem." and it therefore would only be "an obvious matter of design choice to a person of ordinary skill in the art to configure the array" as claimed. This is error. Page 6, lines 161-167, of the present application, states "The configuration of the diode array 12 provides four "hot spots" where the beams of the first, second and third laser diodes 1, 2 and 3 overlap. Due to the "Soliton Phenomenon", where multiple overlapping waveforms create unique wave structures capable of imparting effects unattainable with individual waveforms, improved penetration into tissue is provided." Applicant disclosed that the claimed arrangement of the laser diodes in the array provides improved penetration into tissue, and is not an obvious matter of design choice. The claimed arrangement provides a benefit unexpected from the sited art.

Sullivan teaches LEDs, not laser diodes, in the devices disclosed. Although Sullivan teaches that the device is not limited to LEDs at column 8, line 54, Sullivan teaches away from laser diodes. At column 3, lines 21-24, Sullivan states "Another advantage of having the capability or option of working from a distance is that the LED's (unlike lasers) diffuse as the unit gets further and further away from the object being illuminated." Since Sullivan does not teach or suggest all of the elements and definitions of Claim 1, the elements and definitions of Claim 1 provide an unexpected benefit and are not an obvious matter of design choice, and Sullivan teaches away from the claimed device, the rejection of Claim 1 under 35 U.S.C. 103(a) as unpatentable over Sullivan should be withdrawn.

Claim 2 is dependent from Claim 1 and further claims that the first, second and third laser diodes of each set are oriented at 120 degrees to each other. As explained above, the orientation of the laser diodes relative to each other is independent of the arrangement or positioning of the laser diodes relative to each other in each set in the array. Sullivan does not teach or suggest the first, second and third laser diodes of a set of three laser diodes being oriented at 120 degrees to each other. The orientation of the laser diodes relative to each other and the arrangement of the laser diodes relative to each other both contribute to the configuration of the present invention that provides improved penetration into tissue. Since Sullivan does not teach or suggest all of the elements

and definitions of Claim 1, or the further definitions of Claim 2, the rejection of Claim 2 under 35 U.S.C. 103(a) as unpatentable over Sullivan should be withdrawn.

Claim 3 is dependent from Claim 1 and further claims that each said set has a center and the first, second and third laser diodes of each set are oriented along lines through the center of the set. Sullivan does not teach or suggest the first, second and third laser diodes of a set of three laser diodes being oriented along lines through the center of the set. The orientation of the laser diodes relative to each other and the arrangement of the laser diodes relative to each other both contribute to the configuration of the present invention that provides improved penetration into tissue. Since Sullivan does not teach or suggest all of the elements and definitions of Claim 1, or the further definitions of Claim 3, the rejection of Claim 3 under 35 U.S.C. 103(a) as unpatentable over Sullivan should be withdrawn.

Claim 4 is dependent from Claim 1 and further claims that that first, second and third laser diodes of each set each have a different wavelength. Claim 5 is dependent from Claim 4 and further claims that each first laser diode has a wavelength of 650nm, each second laser diode has a wavelength of 780nm, and each third laser diode has a wavelength of 808nm. Since Sullivan does not teach or suggest all of the elements and definitions of Claim 1, the rejections of Claim 4

and 5 under 35 U.S.C. 103(a) as unpatentable over Sullivan should be withdrawn.

Claim 6 is dependent from Claim 1 and further claims that the diode array includes two each first, second, third and fourth light emitting diodes arranged in a cross formation between the sets of laser diodes and mirrored across the center. Sullivan does not teach or suggest an array with laser diodes and LEDs, or an array with two types of light source, and teaches away from using laser diodes. Claim 7 is dependent from Claim 6 and further claims that the first light emitting diodes have a wavelength of 660nm, the second light emitting diodes have a wavelength of 880nm, the third light emitting diodes have a wavelength of 470nm, and the fourth light emitting diodes have a wavelength of 940nm. Since Sullivan does not teach or suggest all of the elements and definitions of Claim 1, or the further definitions of Claim 6, the rejections of Claim 6 and 7 under 35 U.S.C. 103(a) as unpatentable over Sullivan should be withdrawn.

Claims 8-17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,602,275 to Sullivan in view of International Publication No. WO 01/32262 to Passy. Claim 8 is dependent from Claim 1 and further includes an electric power source mounted in the housing, and programmable control electronics mounted in the housing, connected to and powered by the power source, and connected to and providing electric power to each of the first,

second and third laser diodes to individually activate and control the intensity of each of the first, second and third laser diodes.

Sullivan and Passy combined do not teach or suggest an array with sets of first, second and third laser diodes, do not teach or suggest sets of laser diodes equally spaced about the center of the array, do not teach or suggest sets of first, second and third laser diodes each arranged in an equilateral triangle, and do not teach or suggest the first laser diodes each being spaced a first distance from the center of the diode array, and the second and third laser diodes each being spaced a greater second distance from the center of the diode array, as claimed in Claim 1. Neither of Sullivan or Passy teach or suggest providing electric power to each of the first, second and third laser diodes to individually activate and control the intensity of each of the first, second and third laser diodes. Sullivan teaches only activation and control of groups or "series strings", not individual activation and control. Since Sullivan and Passy combined do not teach or suggest all of the elements and definitions of Claim 1, or the further definitions of Claim 8, the rejection of Claim 8 under 35 U.S.C. 103(a) as unpatentable over Sullivan in view of Passy should be withdrawn.

Claim 9 is dependent from Claim 8 and further claims that the control electronics includes a plurality of preprogrammed modes for activating the first, second and third laser diodes. Since neither

Sullivan or Passy teach or suggest individual control and activation of the first second and third diode laser, neither Sullivan or Passy teach or suggest a plurality of preprogrammed modes for activating the first, second and third laser diodes. Claim 10 is dependent from Claim 9 and further claims that the laser system includes means for operator input connected to the control electronics, for operator control of the control electronics. Since Sullivan and Passy combined do not teach or suggest all of the elements and definitions of Claim 1 or 8, or the further definitions of Claim 9, the rejections of Claims 9 and 10 under 35 U.S.C. 103(a) as unpatentable over Sullivan in view of Passy should be withdrawn.

Claim 11 is dependent from Claim 10 and further claims that the means for operator input has an on/off button mounted on the front of said housing for turning the control electronics on and off, and a mode button mounted on the front of the housing for selecting one of the modes. Since neither Sullivan or Passy teach or suggest a plurality of preprogrammed modes for activating the first, second and third laser diodes, neither Sullivan or Passy teach or suggest a mode button for selecting one of the modes. Since Sullivan and Passy combined do not teach or suggest all of the elements and definitions of Claim 1, 8 or 9, or the further definitions of Claim 11, the rejection of Claim 11 under 35 U.S.C. 103(a) as unpatentable over Sullivan in view of Passy should be withdrawn.

Claim 12 is dependent from Claim 11 and further claims that the means for operator input includes a jack mounted on the housing for connection to a calibration device for calibrating the diode array through the control electronics and downloading additional the modes to the control electronics. Since neither Sullivan or Passy teach or suggest a plurality of preprogrammed modes for activating the first, second and third laser diodes, neither Sullivan or Passy teach or suggest a jack for connection to a calibration device for calibrating the diode array through the control electronics and downloading additional the modes to the control electronics. Since Sullivan and Passy combined do not teach or suggest all of the elements and definitions of Claim 1, 8, 9 or 11 or the further definitions of Claim 12, the rejection of Claim 12 under 35 U.S.C. 103(a) as unpatentable over Sullivan in view of Passy should be withdrawn.

Claim 13 is dependent from Claim 9 and further claims that the laser system includes means for operator output mounted on the front of the housing and connected to the control electronics, for advising an operator of the status of the control electronics and the diode array. Claim 14 is dependent from Claim 13 and further claims that the means for operator output includes a mode indicator, a battery indicator and a time remaining indicator. Since Sullivan and Passy combined do not teach or suggest all of the elements and definitions of Claim 1, 8 or 9, the rejections of Claims 13 and 14 under 35 U.S.C. 103(a) as unpatentable over Sullivan in view of Passy should be withdrawn.

Claim 15 is an independent claim that claims a therapeutic laser system including a housing sized having a front and a back, a substantially planar diode array mounted in a recessed manner on the back of the housing, an electric power source mounted in the housing, programmable control electronics mounted in the housing, means for operator input connected to the control electronics for operator control of the control electronics, and means for operator output mounted on the front of the housing for advising an operator of the status of the control electronics and the diode array. The housing is shaped to be comfortably held in the hand of an operator.

The diode array has a center, four sets of laser diodes each having a first, second and third laser diode, and two each first, second, third and fourth light emitting diodes. Each said set of laser diodes is arranged in an equilateral triangle. The sets are equally spaced about the center with the first laser diodes of each set being spaced a first distance from the center of the diode array, and the second and third laser diodes being spaced a greater second distance from the center of the diode array. Each set has a center with the first, second and third laser diodes of each set being oriented at 120 degrees to each other along lines through the center of the set. The first, second, third and fourth light emitting diodes are arranged in a cross formation between the sets of laser diodes and mirrored across the center. Each first laser diode has a wavelength of 650nm. Each second laser diode has a wavelength of 780nm. Each

third laser diode has a wavelength of 808nm. The first light emitting diodes have a wavelength of 660nm. The second light emitting diodes have a wavelength of 880nm. The third light emitting diodes have a wavelength of 470nm, The fourth light emitting diodes have a wavelength of 940nm.

The programmable control electronics are connected to and powered by the power source. The programmable control electronics are connected to and provide electric power to each of the first, second and third laser diodes and the first, second, third and fourth light emitting diodes to individually activate and control the intensity of each of the first, second and third laser diodes and the first, second, third and fourth light emitting diodes. The control electronics includes a plurality of preprogrammed modes for activating the first, second and third laser diodes and the first, second, third and fourth light emitting diodes. The means for operator input has an on/off button mounted on the front of said housing for turning the control electronics on and off, a mode button mounted on the front of the housing for selecting one of the modes, and a jack mounted on the housing for connection to a calibration device for calibrating the diode array through the control electronics and downloading additional modes to the control electronics. The means for operator output includes a mode indicator, a battery indicator and a time remaining indicator.

Sullivan and Passy combined do not teach or suggest an array with sets of first, second and third laser diodes, do not teach or suggest sets of laser diodes equally spaced about the center of the array, do not teach or suggest sets of first, second and third laser diodes each arranged in an equilateral triangle, and do not teach or suggest the first laser diodes each being spaced a first distance from the center of the diode array, and the second and third laser diodes each being spaced a greater second distance from the center of the diode array.

Neither of Sullivan or Passy teach or suggest the first, second and third laser diodes of a set of three laser diodes being oriented at 120 degrees to each other. Neither of Sullivan or Passy teach or suggest the first, second and third laser diodes of a set of three laser diodes being oriented along lines through the center of the set. Neither of Sullivan or Passy teach or suggest providing electric power to each of the first, second and third laser diodes to individually activate and control the intensity of each of the first, second and third laser diodes.

Neither Sullivan or Passy teach or suggest a plurality of preprogrammed modes for activating the first, second and third laser diodes. Neither Sullivan or Passy teach or suggest a mode button for selecting one of the modes. Neither Sullivan or Passy teach or suggest a jack for connection to a calibration device for calibrating the diode array through the control electronics and downloading additional the modes to the

control electronics. Since Sullivan and Passy combined do not teach or suggest all of the elements and definitions of Claim 15, the rejection of Claim 15 under 35 U.S.C. 103(a) as unpatentable over Sullivan in view of Passy should be withdrawn.

Claim 16 is an independent claim that claims a method of laser therapy including the steps of providing a diode array having a center and four sets of laser diodes each having a first, second and third laser diode, pulsing the first, second and third laser diodes according to a selected frequency sequence, and projecting the resultant beam on selected tissue to impart energy into the tissue. Each said set of laser diodes is arranged in an equilateral triangle. The sets are being equally spaced about the center with the first laser diodes of each the set being spaced a first distance from the center of the diode array, and the second and third laser diodes being spaced a greater second distance from the center of the diode array. The first, second and third laser diodes of each set each have laser beams and are oriented such that in each set the laser beams are oriented at about 120 degrees relative to each other and overlapping.

Sullivan and Passy combined do not teach or suggest an array with sets of first, second and third laser diodes, do not teach or suggest sets of laser diodes equally spaced about the center of the array, do not teach or suggest sets of first, second and third laser diodes each arranged in an equilateral triangle, and do not teach or suggest the first laser diodes each

being spaced a first distance from the center of the diode array, and the second and third laser diodes each being spaced a greater second distance from the center of the diode array. Neither of Sullivan or Passy teach or suggest the first, second and third laser diodes of a set of three laser diodes with laser beams oriented at 120 degrees to each other and overlapping.

Neither of Sullivan or Passy teach or suggest pulsing the first, second and third laser diodes according to a selected frequency sequence. A frequency sequence is a sequence of different frequencies. Sullivan teaches only pulsing at a single frequency, even though the frequency is adjustable over a wide range, and does not teach or suggest pulsing sequentially at different frequencies. Passy does not teach or suggest any pulsing. Since Sullivan and Passy combined do not teach or suggest all of the steps and definitions of Claim 16, the rejection of Claim 16 under 35 U.S.C. 103(a) as unpatentable over Sullivan in view of Passy should be withdrawn.

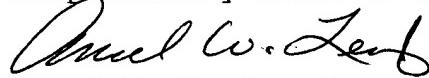
Claim 17 is dependent from Claim 16 and further claims that each first laser diode has a wavelength of 650nm, each second laser diode has a wavelength of 780nm, and each third laser diode has a wavelength of 808nm. Since Sullivan and Passy combined do not teach or suggest all of the steps and definitions of Claim 16, the rejection of Claim 17 under 35 U.S.C. 103(a) as unpatentable over Sullivan in view of Passy should be withdrawn.

Conclusion

Reconsideration and allowance of Claims 1-19 is respectfully requested in view of the foregoing remarks. Should any issues remain that would preclude prompt allowance of this application, it is requested that the Examiner contact the undersigned attorney by telephone.

Attached is a request for Extension of Time of Two Months. A check in the amount of \$215.00 for the extension of time is enclosed. If there is any discrepancy in the fee, please charge Deposit Account No.06-0788.

Respectfully submitted,



Ancel W. Lewis, Jr.
Attorney for Applicant
425 W. Mulberry, Suite 101
Fort Collins, Colorado 80521
(970) 482-2841